Antegrade Approach for Stumpless or Ambiguous Stump CTO

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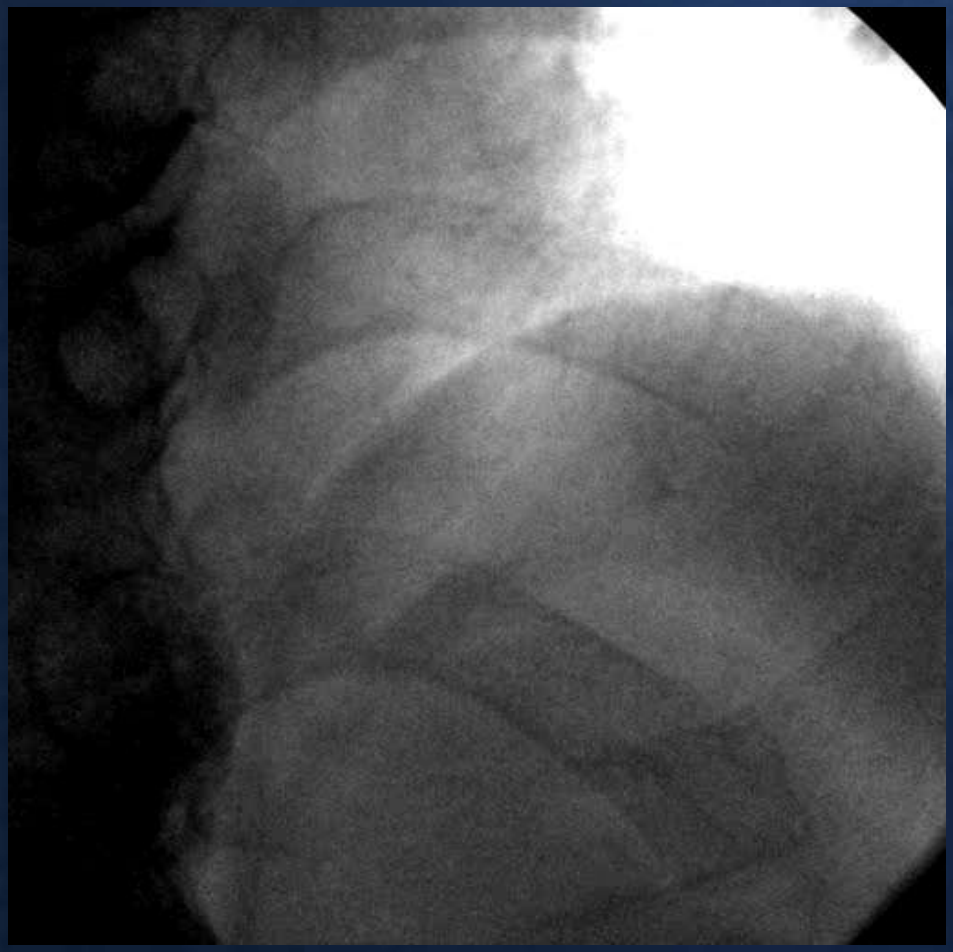
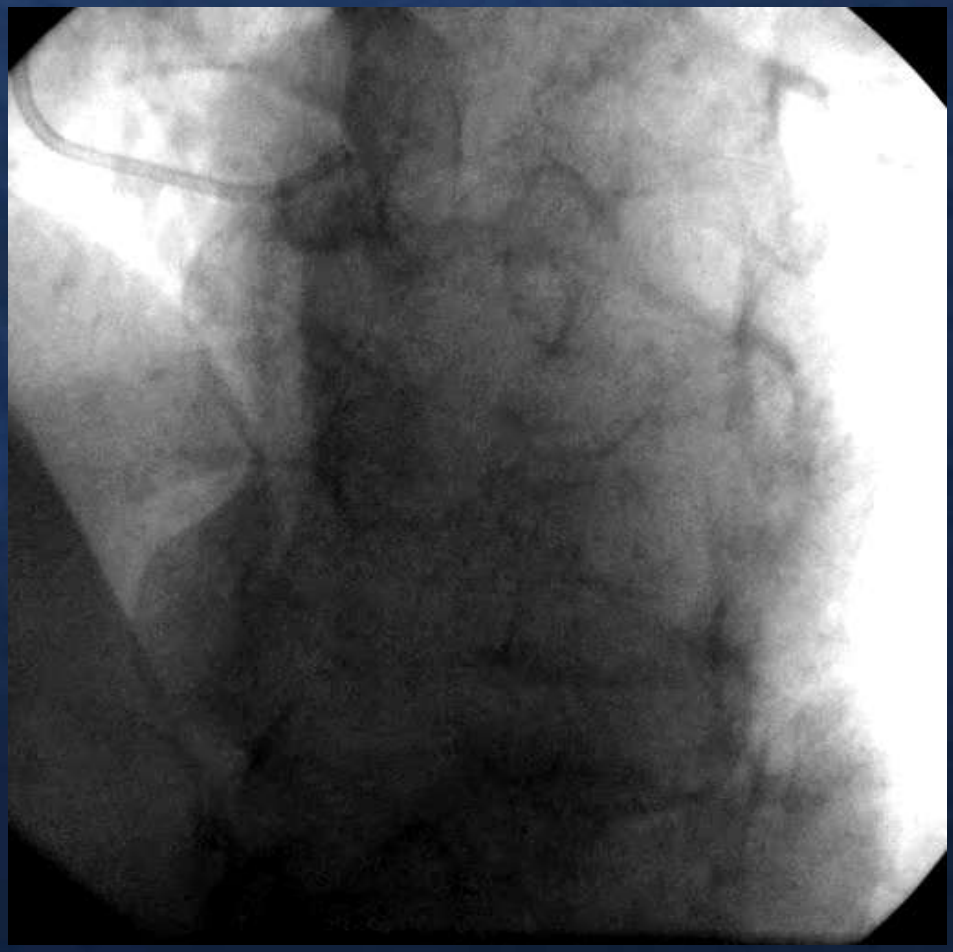
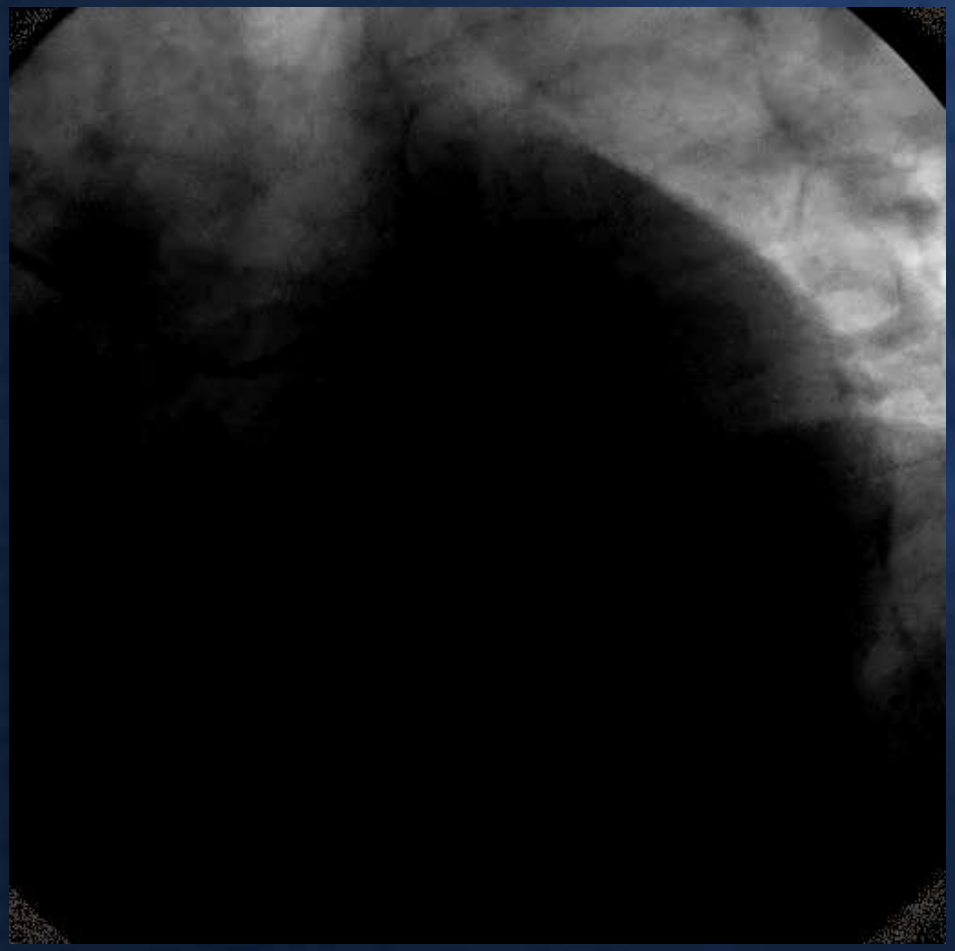
Case 1

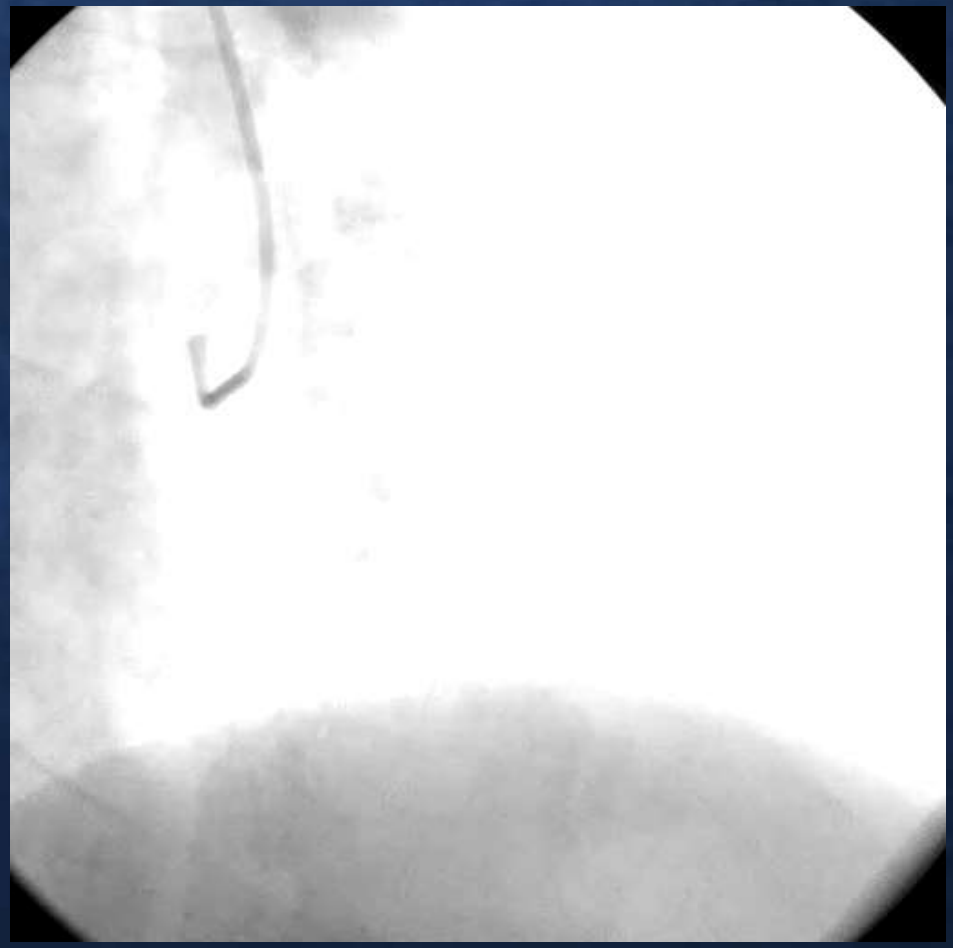
- 61-yr-old male with effort chest pain
- HTN, DM under medications
- EKG, cardiac enzyme: non-specific finding
- Treadmill test: positive finding at stage II
- Echocardiography: Non-specific finding
- Dx : Stable angina

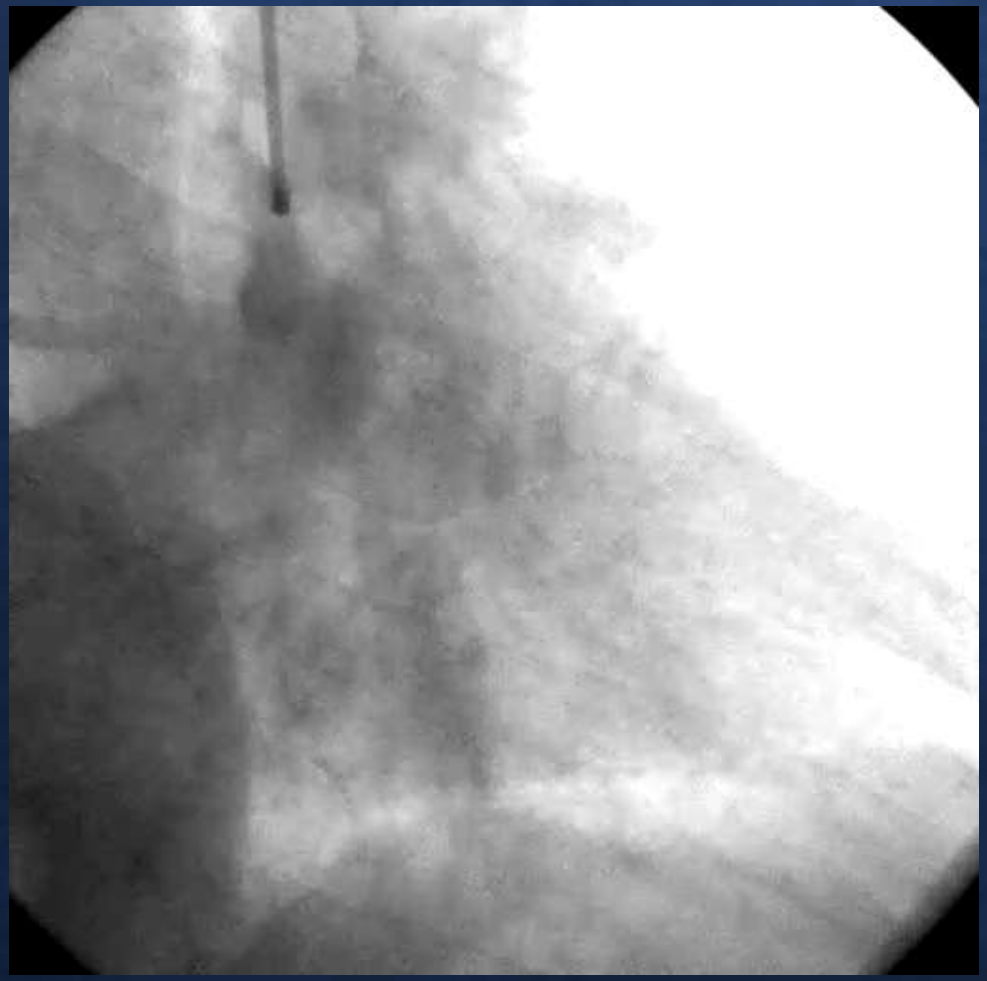
Baseline Angiography











What is your plan?

- ***Bad signs***

  a) Can’t find any stump at any projection

  b) Two big side branch arteries

  →Trifurcation stumpless CTO

  c) Collateral connections for retrograde approach

  →Possible, but not so good

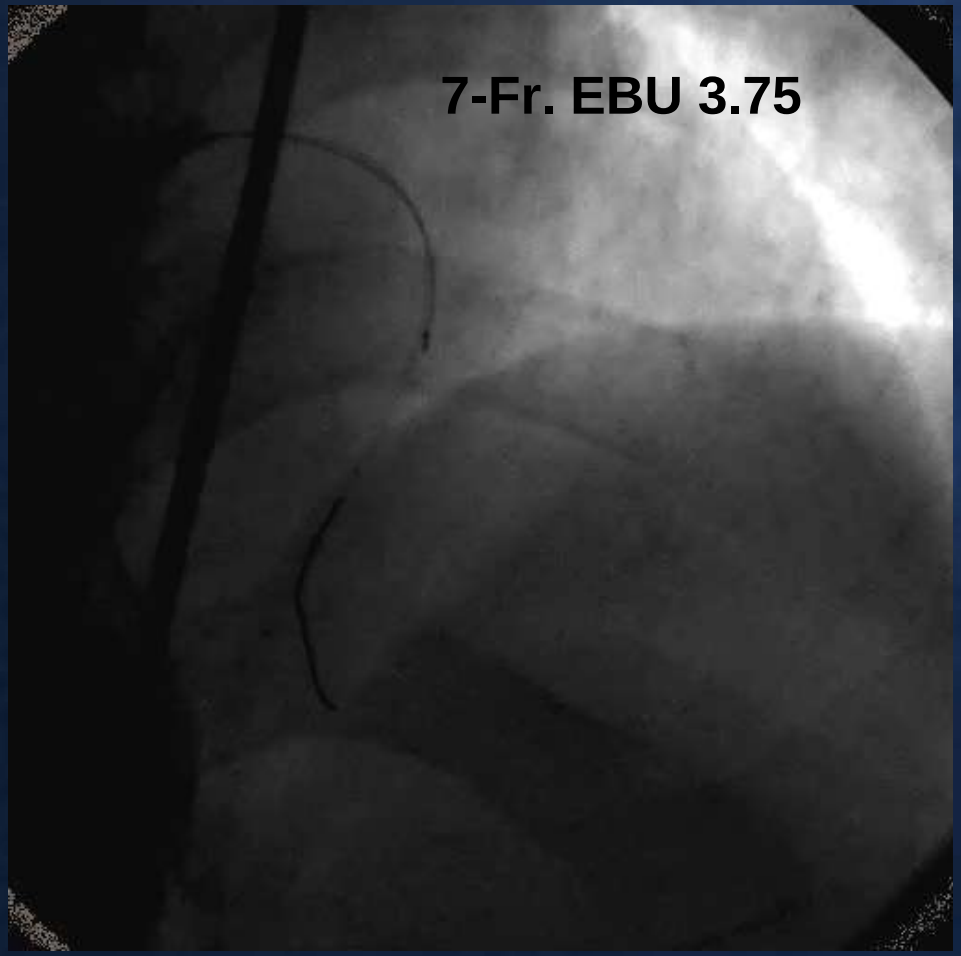
- ***Good signs***

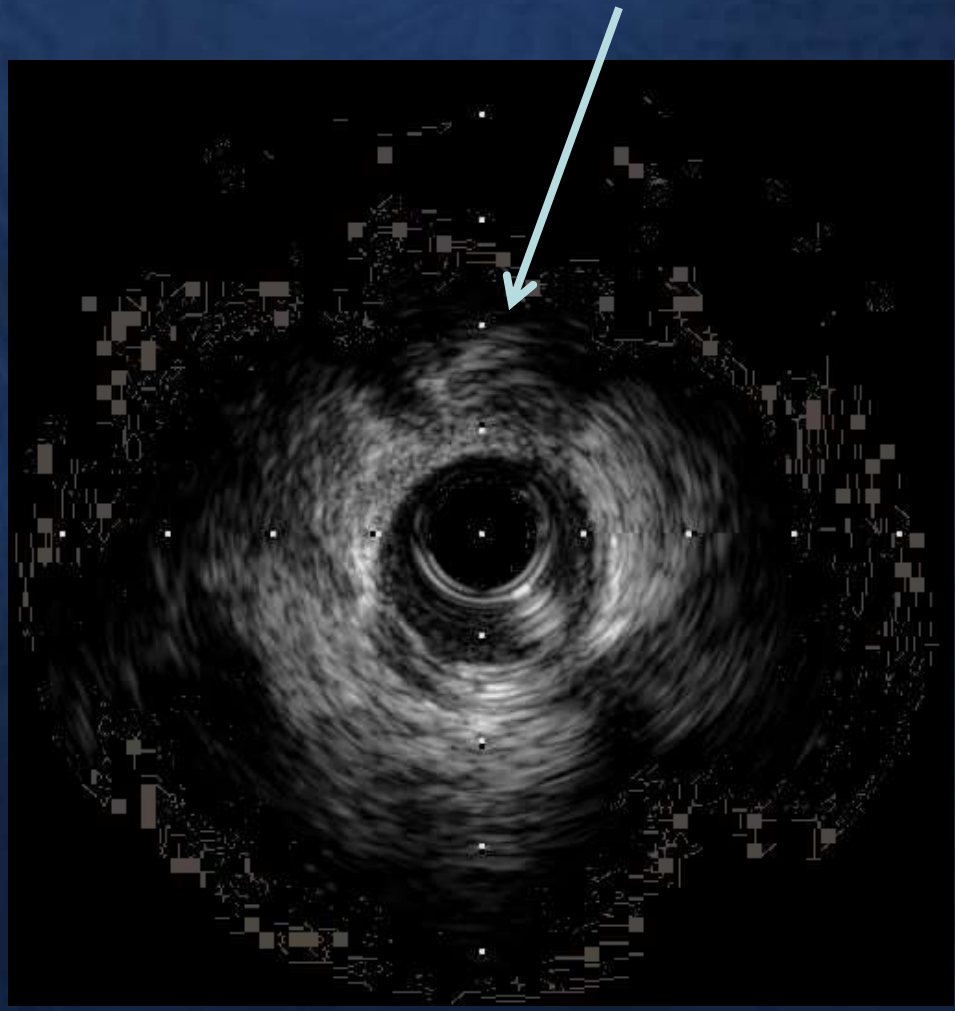
  a) Relatively straight mid-LAD CTO lesion

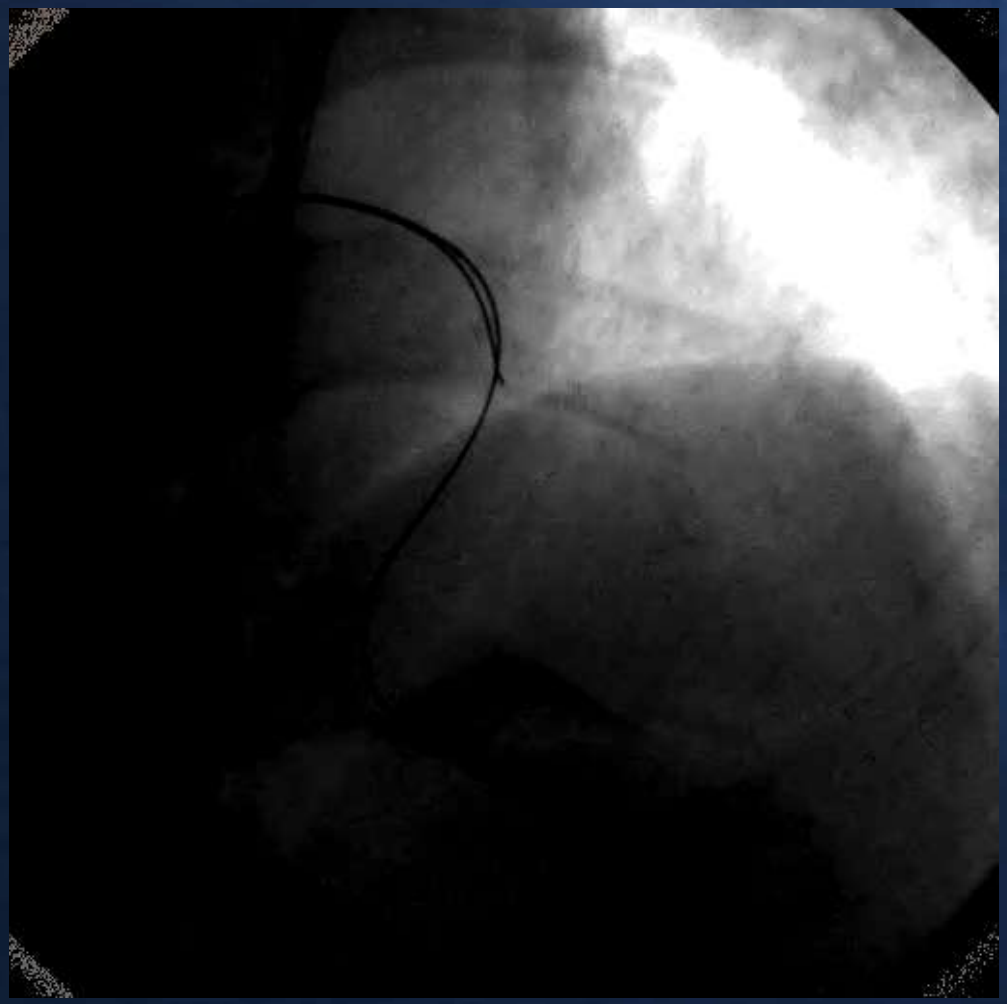
  b) Not so long length of occlusion body

  c) Definite calcification is not seen

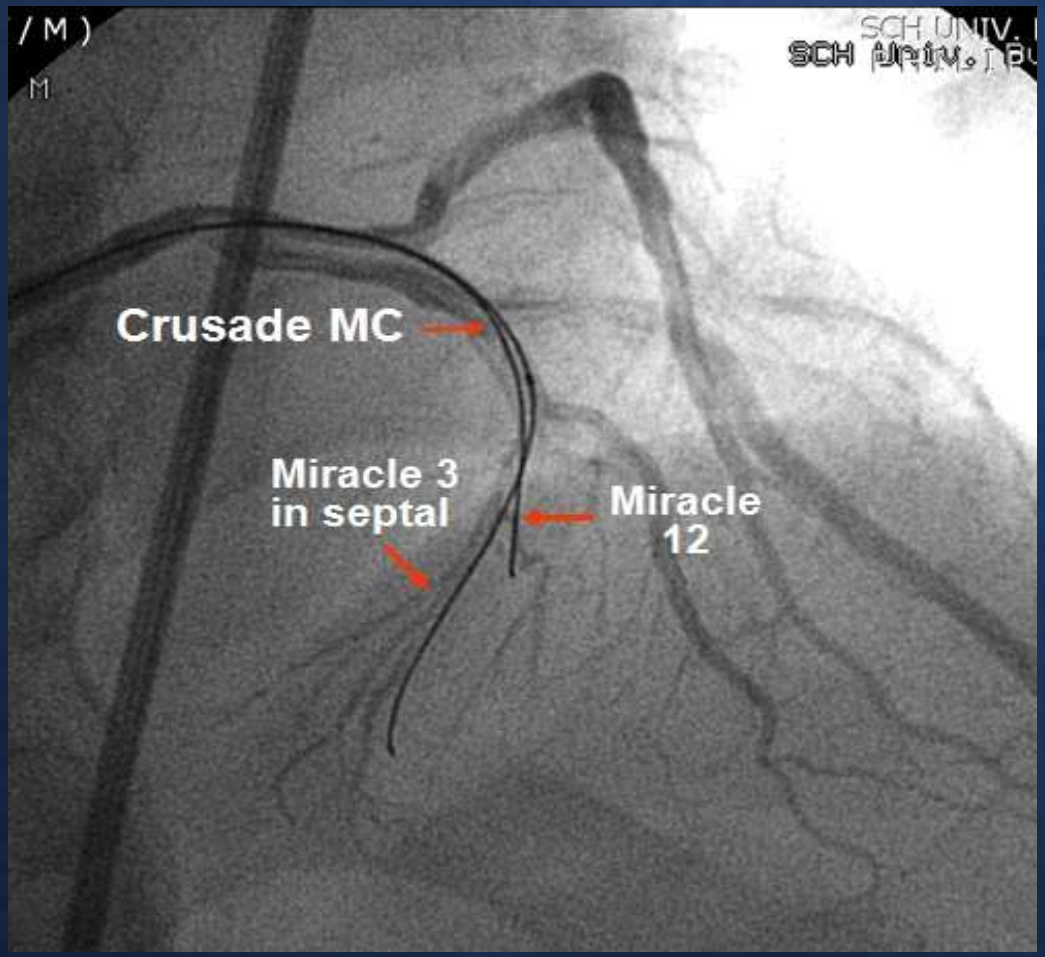
IVUS examination





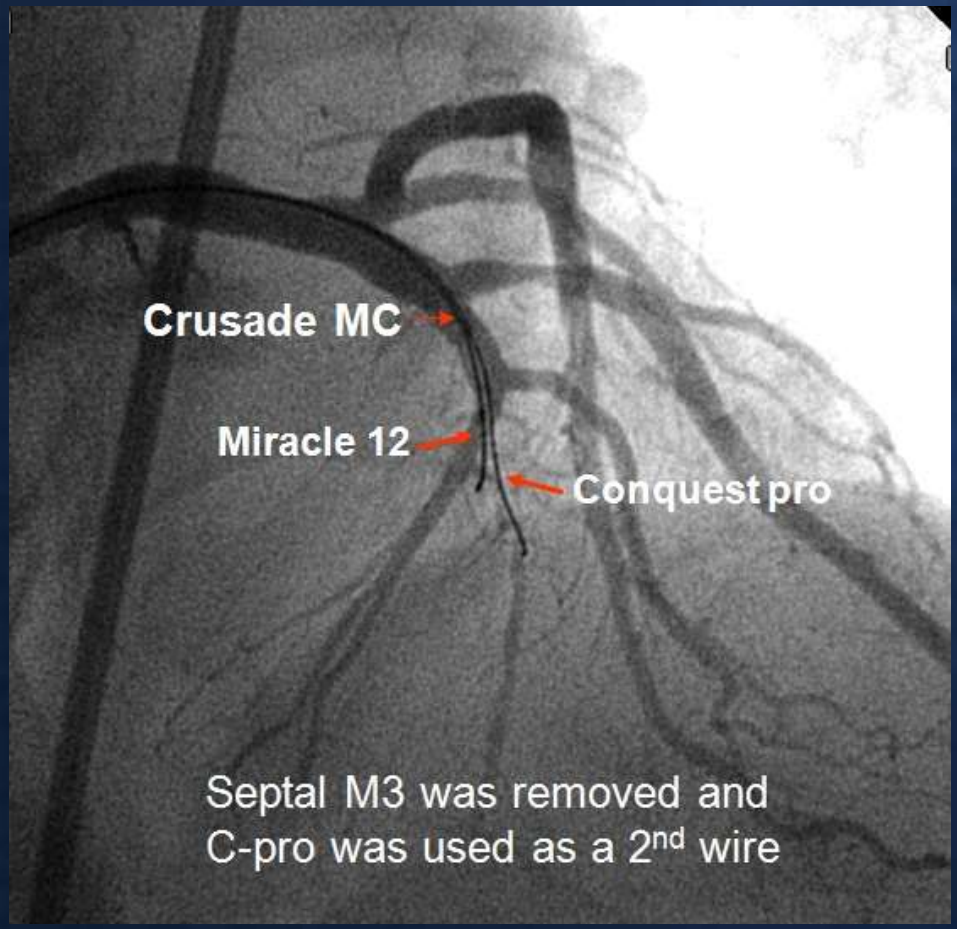


- ✓ Miracle 3 →12g was tried to puncture the proximal cap with the support of Crusade double lumen microcatheter.

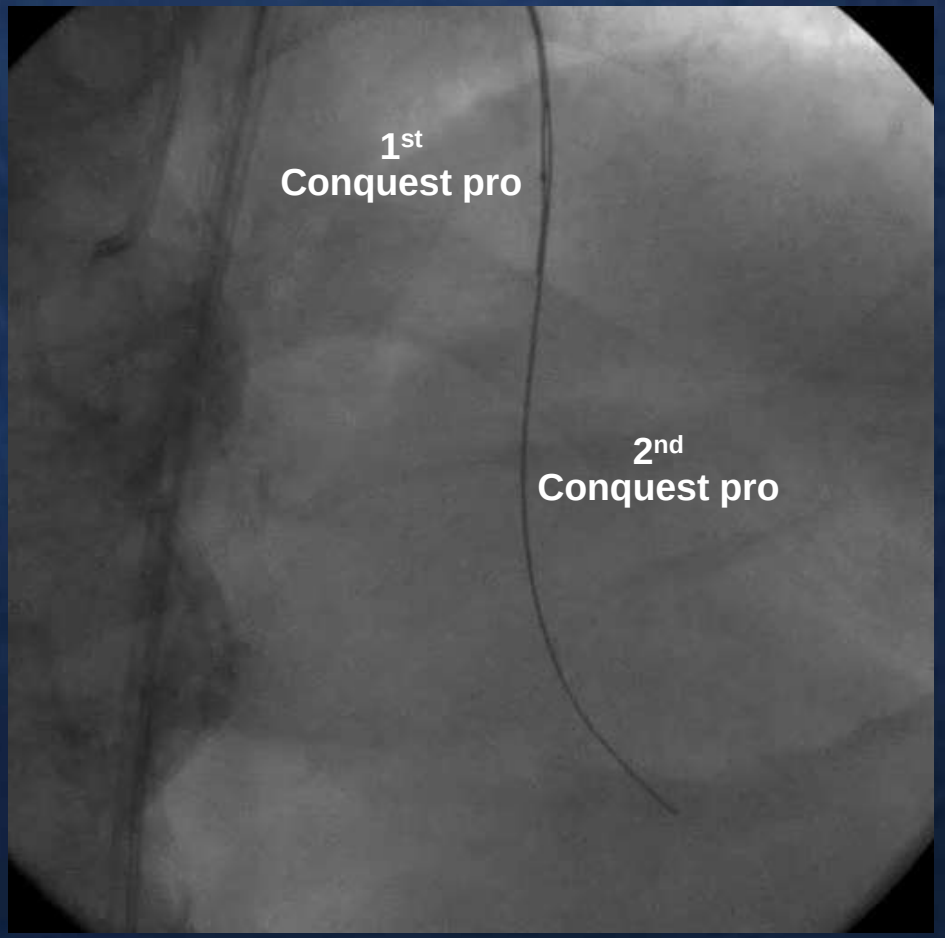


- ✓ Punctured M12g repeatedly entered the false lumen in CTO
- ✓ However, there was a possibility that the M12 altered the vessel axis, which could make handling of 2nd wire easier.

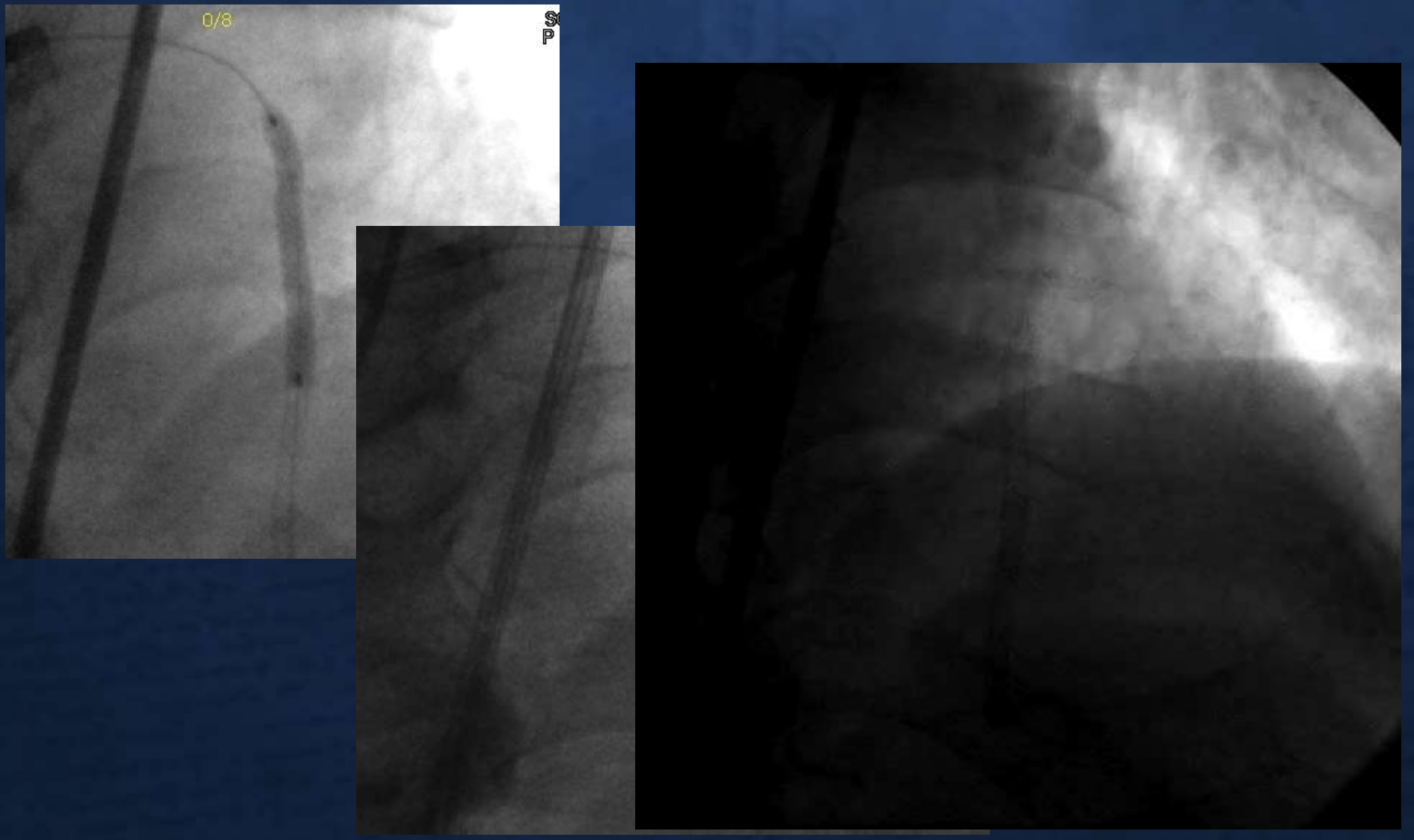
Parallel wire technique



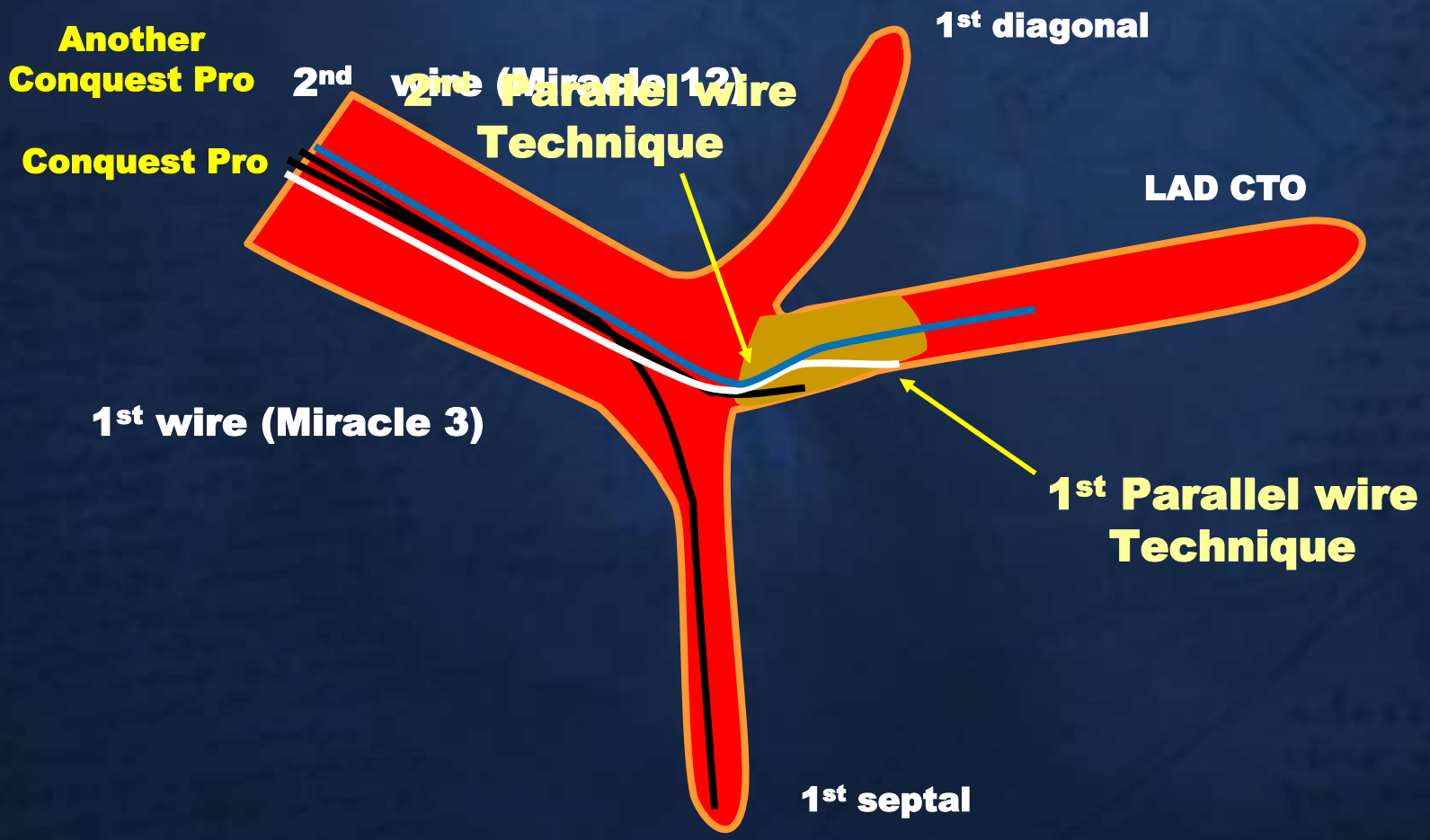
2nd Parallel wire technique



Final result



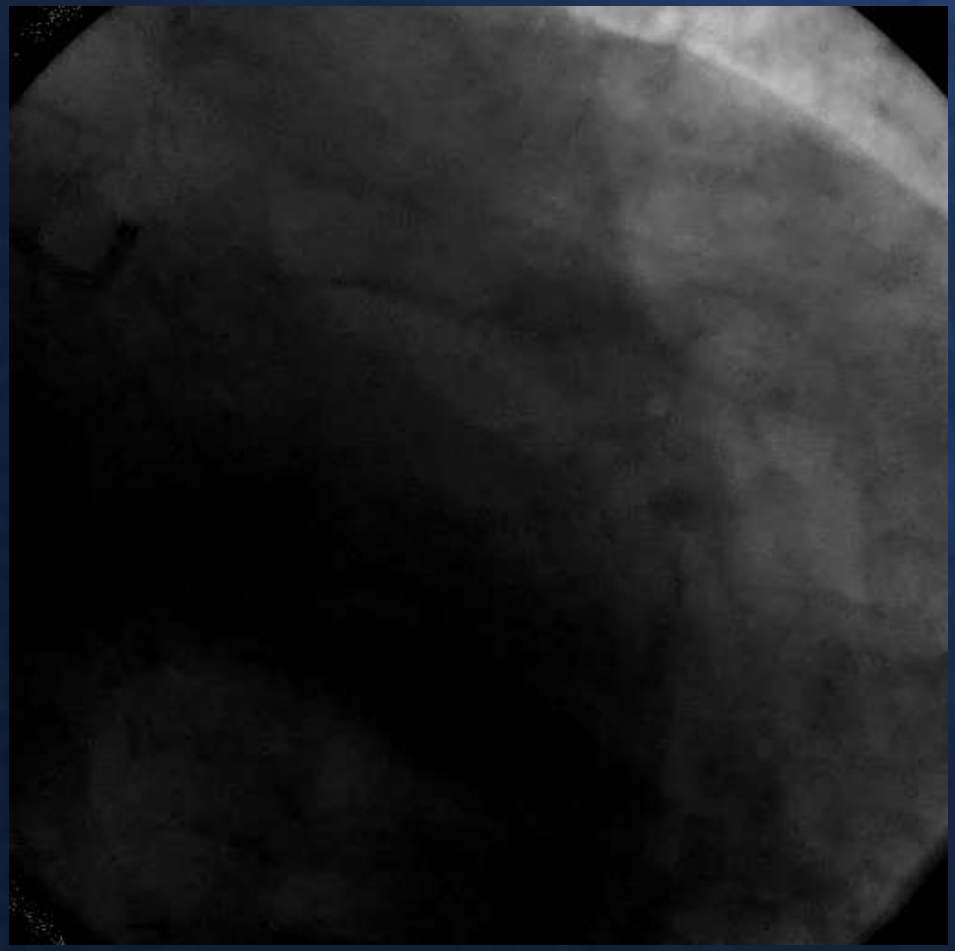
Schema of this case

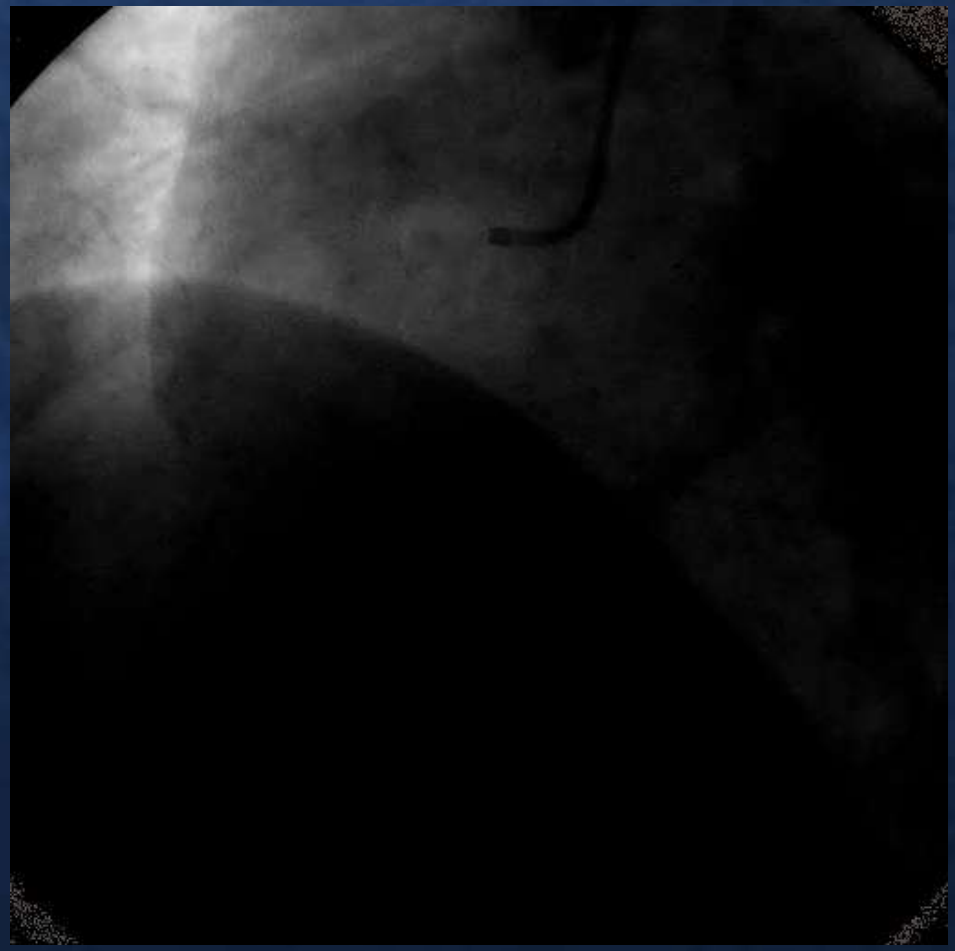


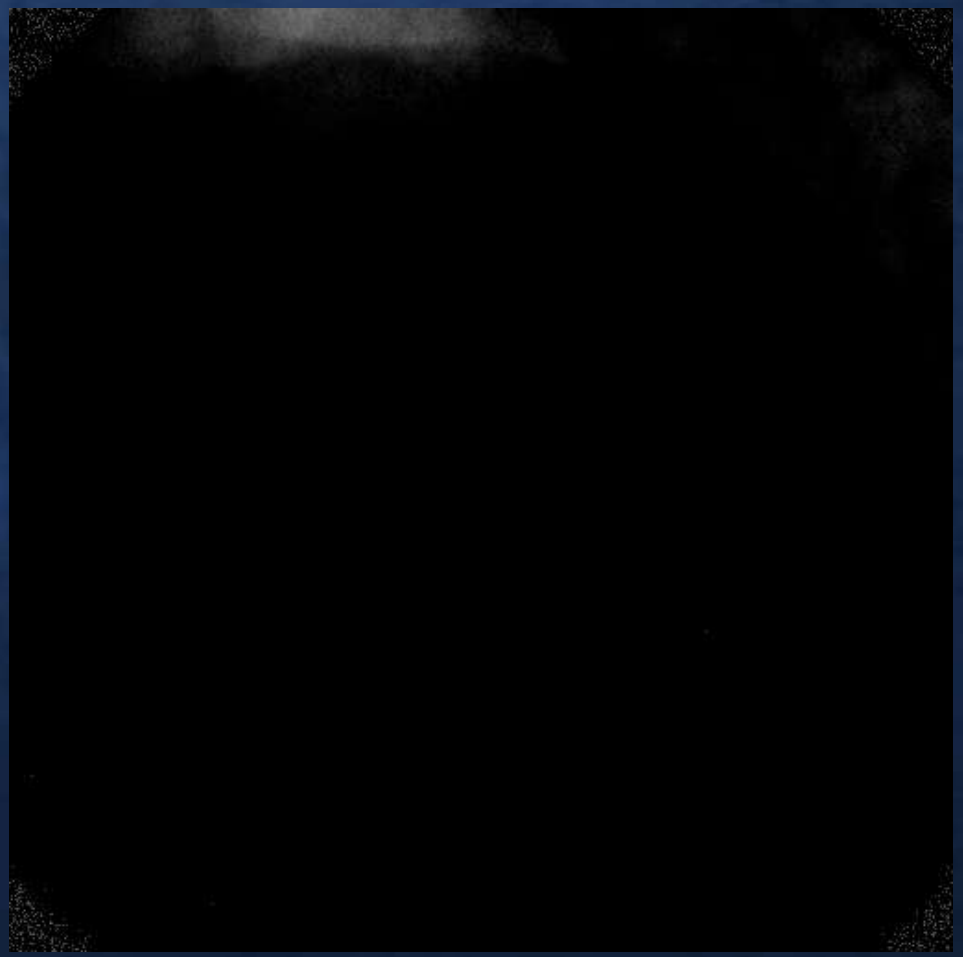
Case 2

- 56-yr-old male with DOE for 6 month
- HTN under medications / Smoker
- EVAR 2 yrs ago, Bladder cancer op
- Echocardiography: LV dysfunction
  - EF=36%, RWMA on LAD territory
- CRF; Bun / Cr = 19 / 1.7 (GFR= 30/ml/min)
- Dx : ICMP

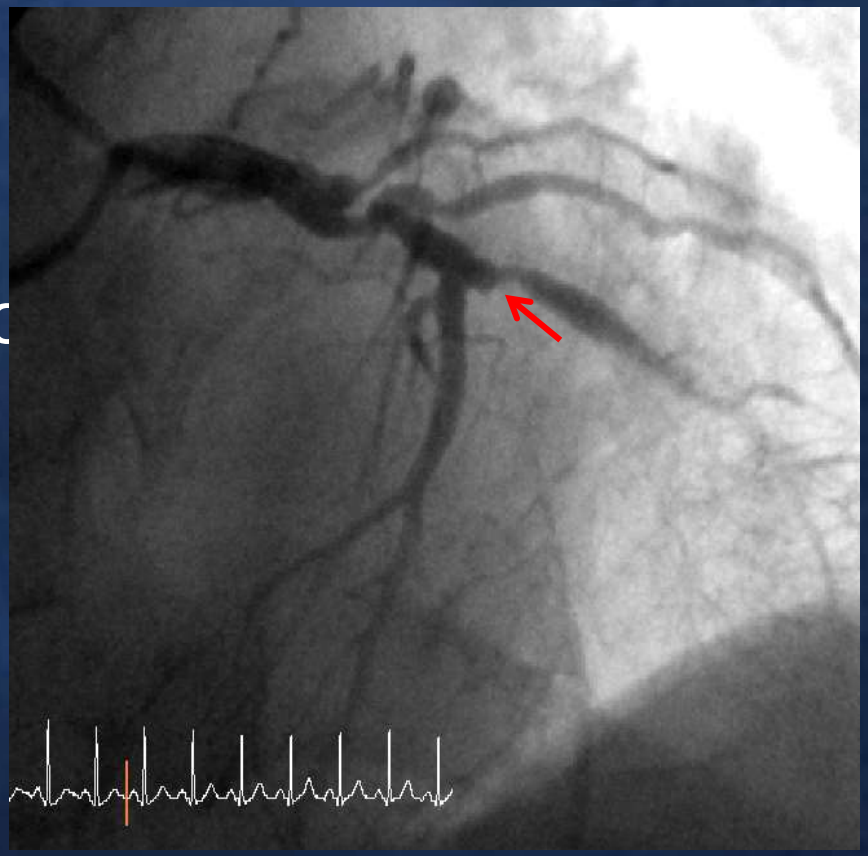
Baseline Angiography







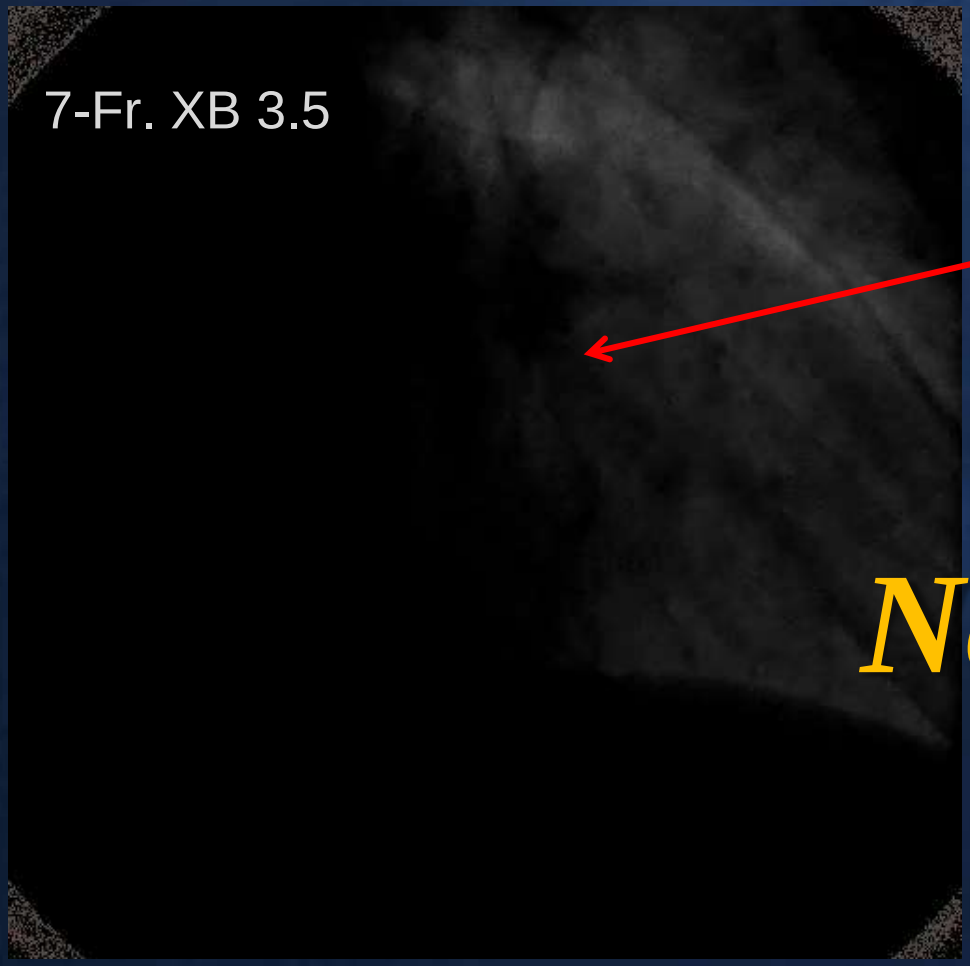
What is your plan?



- ***Bad signs***
  a) Poor LV / Renal functic
  b) Collateral connections
  →not good

- ***Good signs***
  a) Relatively straight
  b) Not so long length
  c) Definite calcification is not seen
  d) Stump can be seen

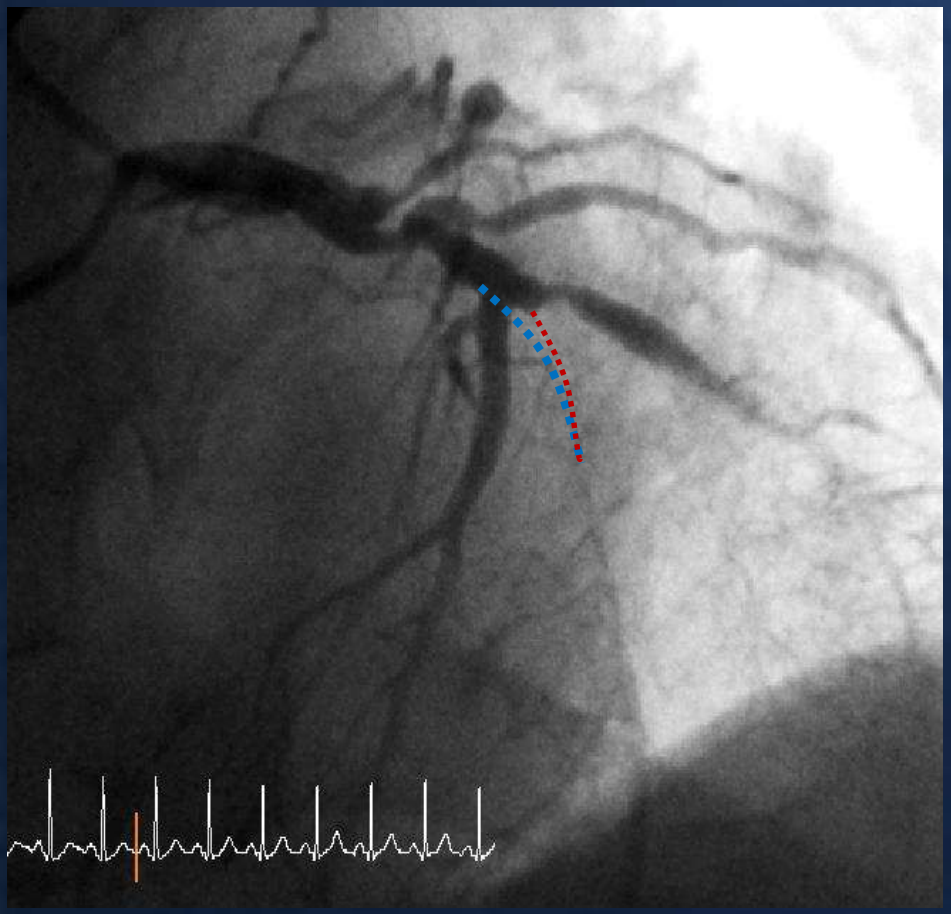
Antegrade approch

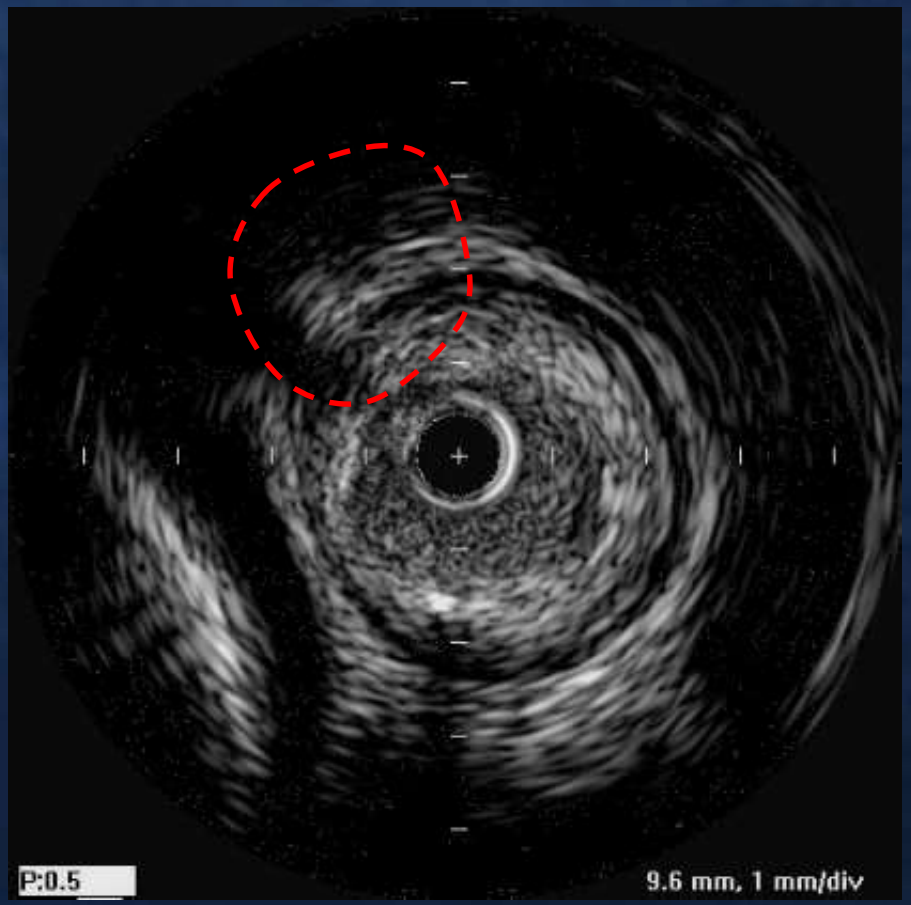


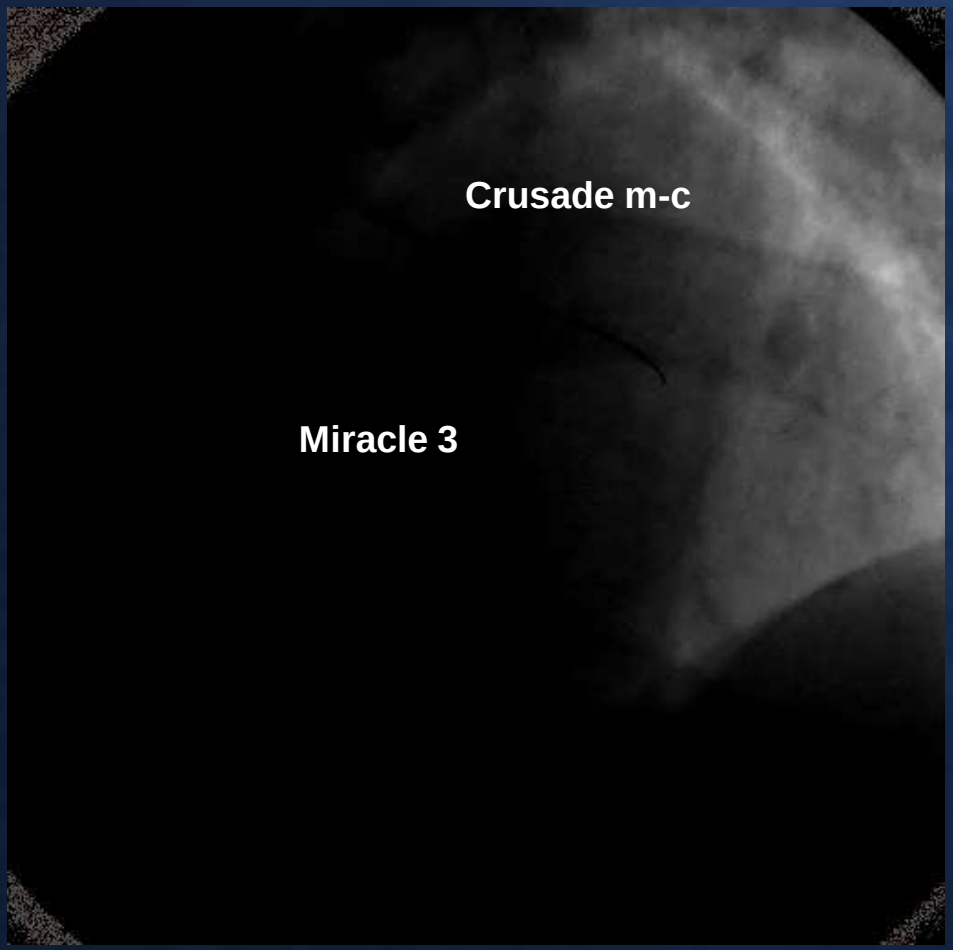
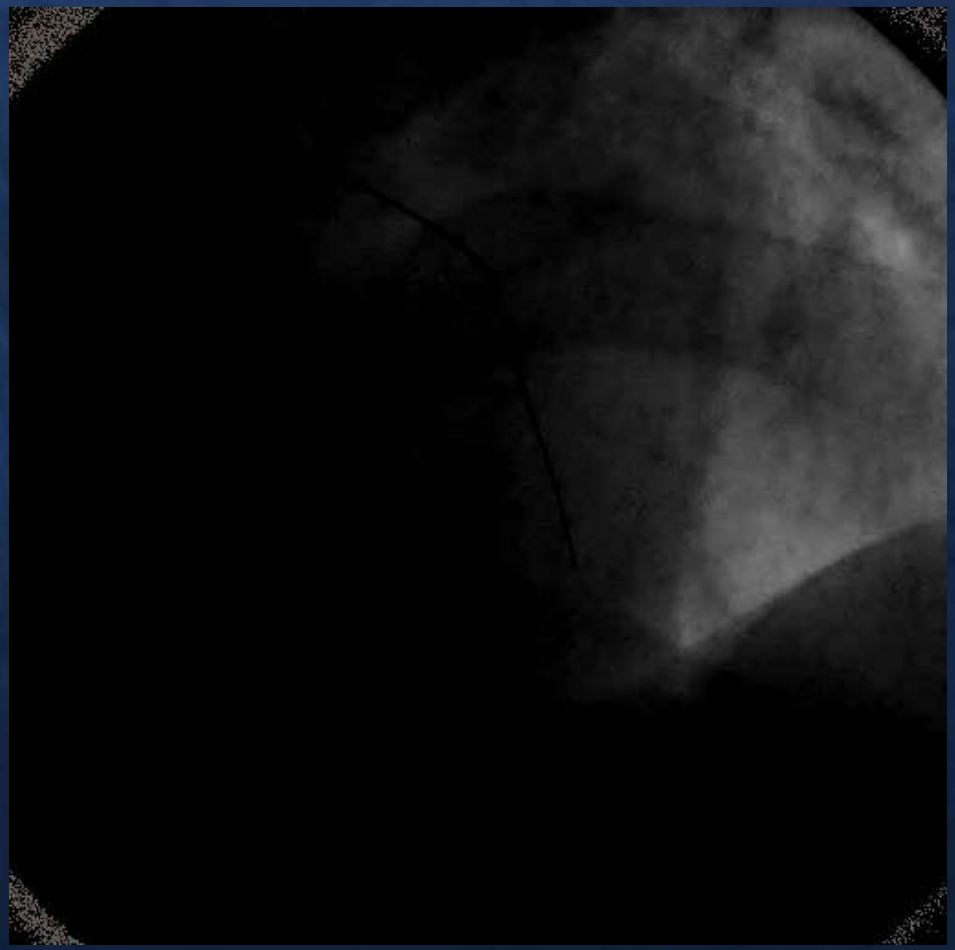
Several efforts to cross the stump-like lesion failed!

Next step?

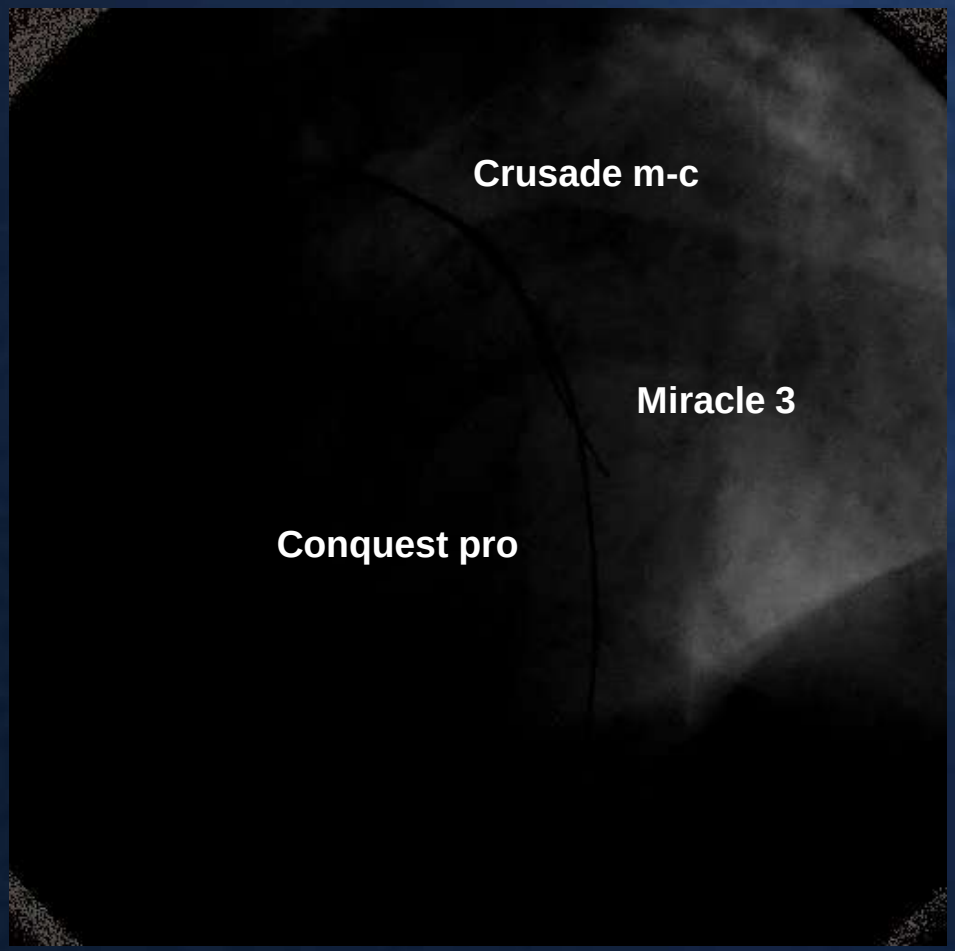
IVUS examination



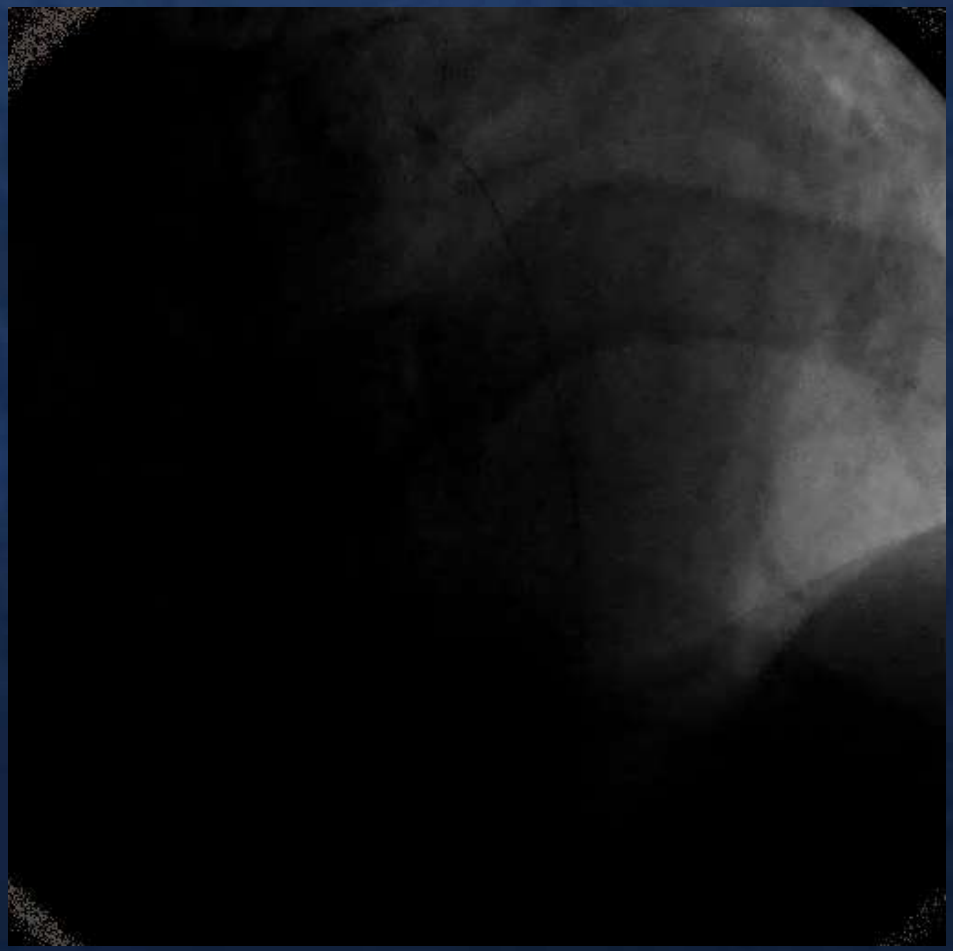


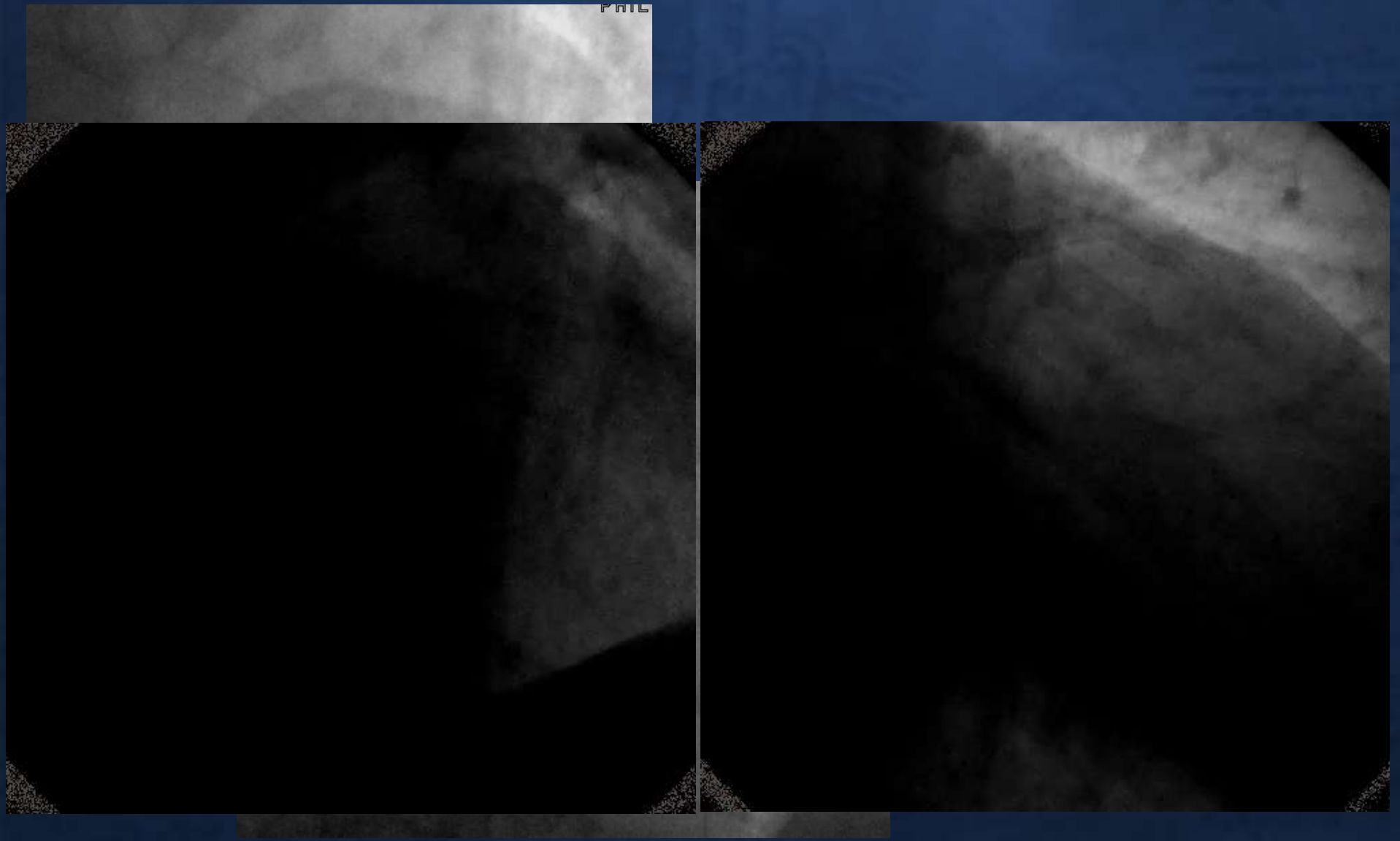

Crusade m-c
Miracle 3


Parallel wire technique

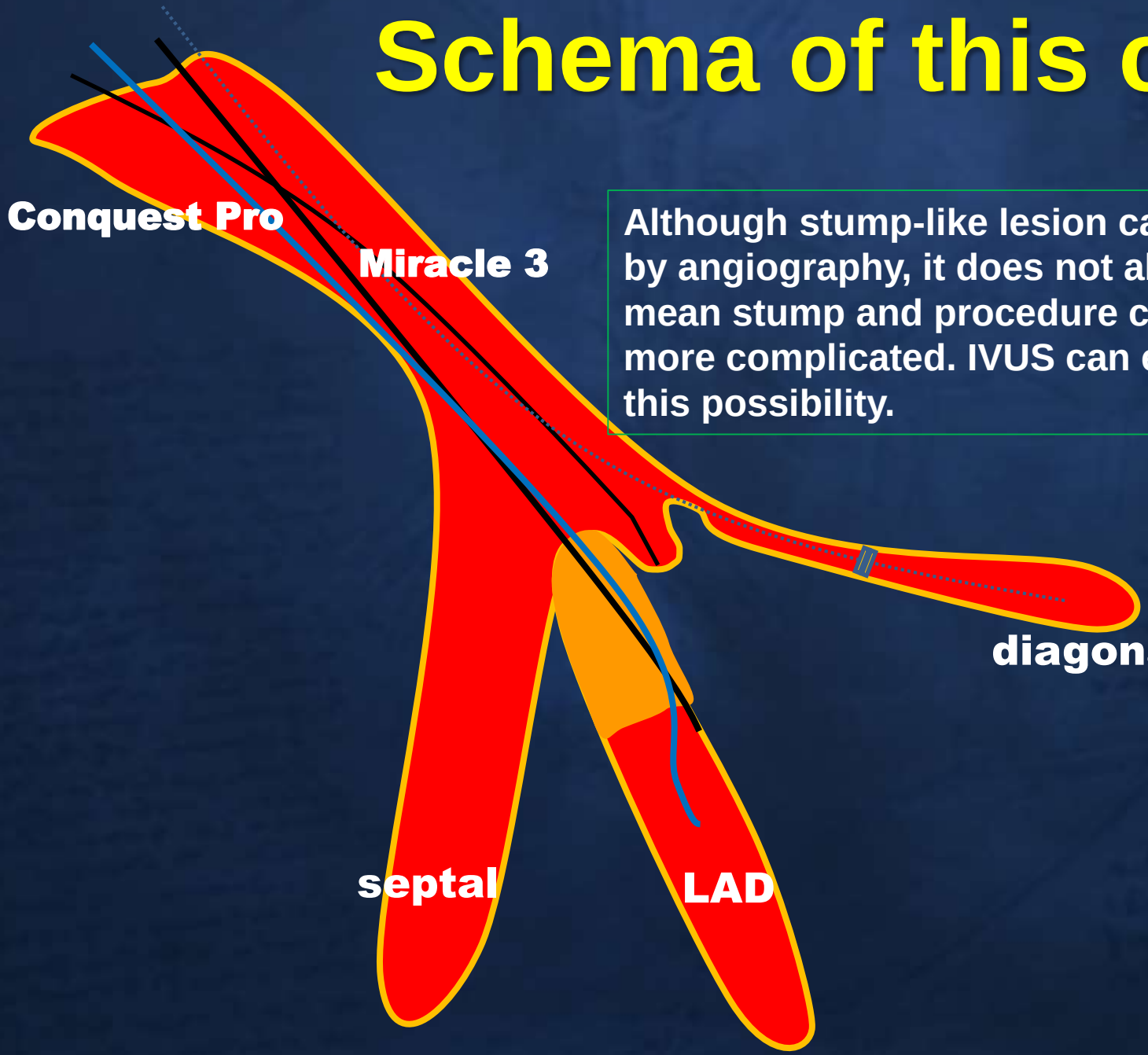


After Ballooning





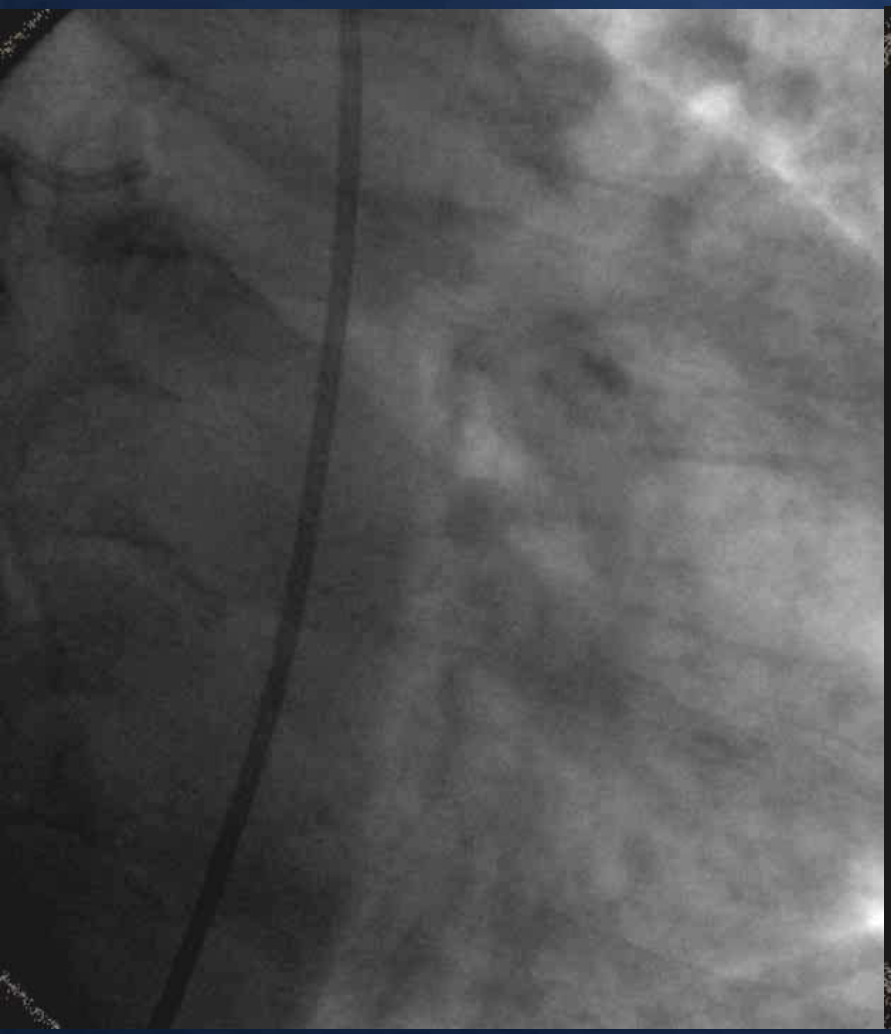
Schema of this case

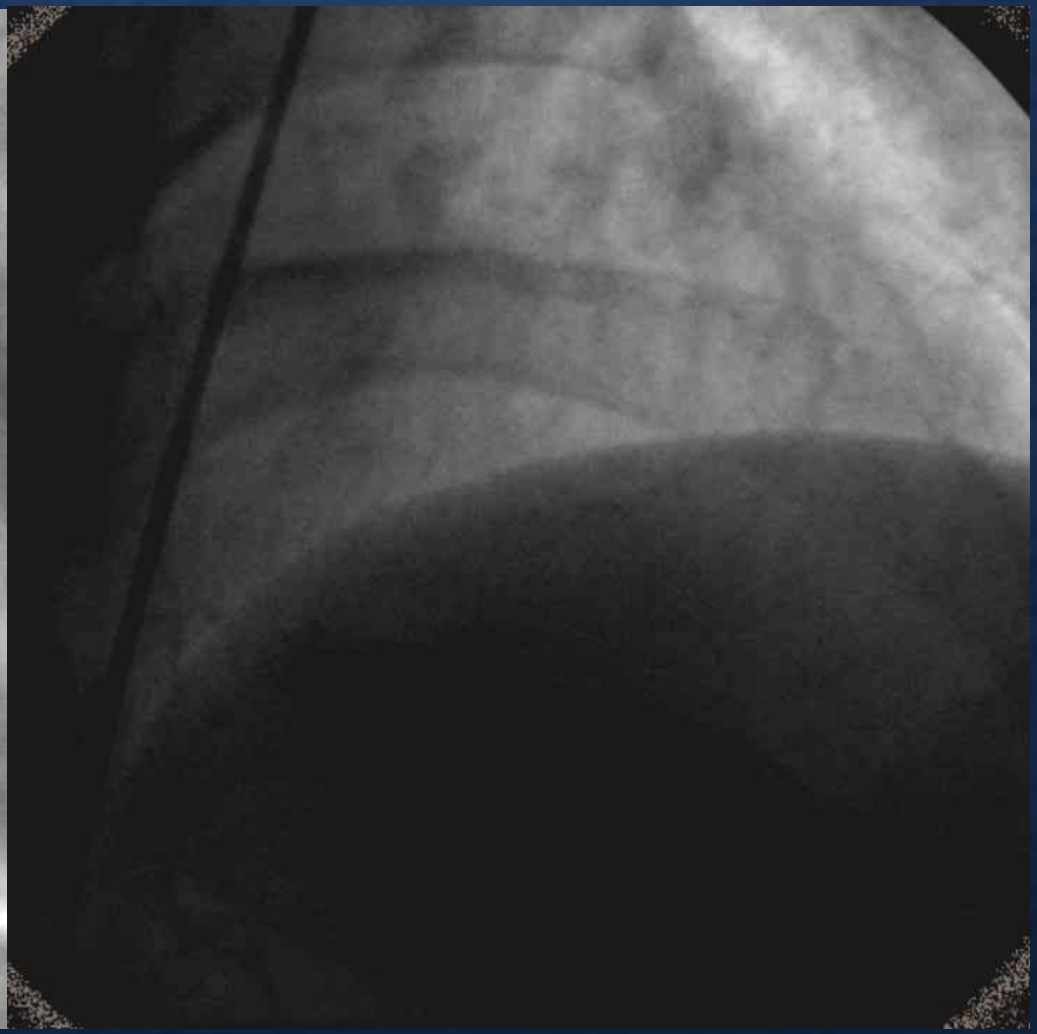


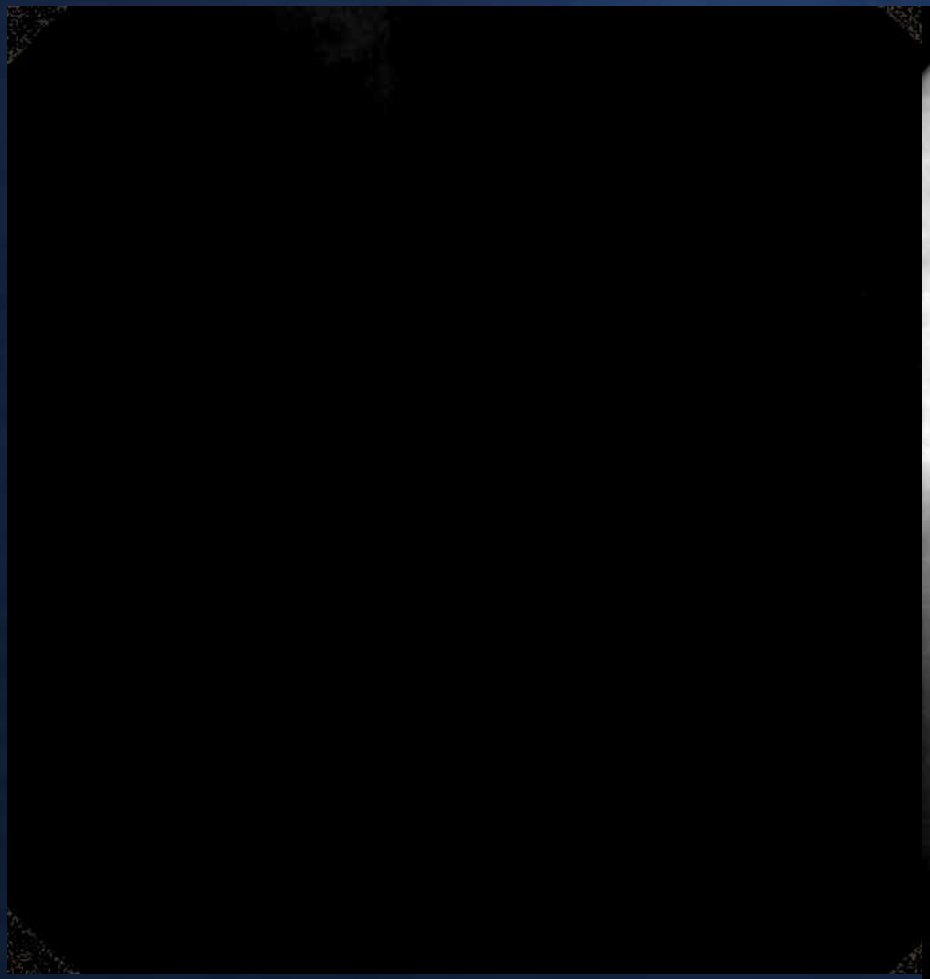
Although stump-like lesion can be seen by angiography, it does not always mean stump and procedure can be more complicated. IVUS can eliminate this possibility.

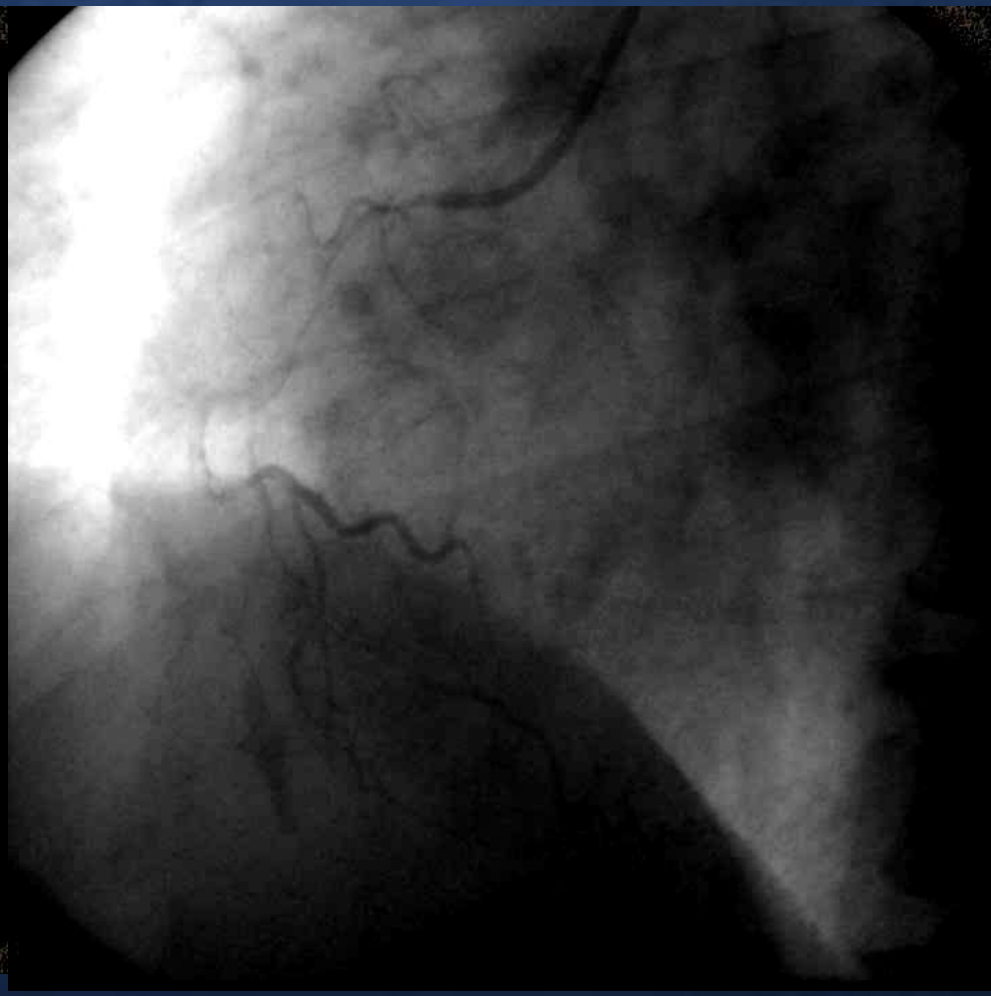
Very similar case(in my beginning period)

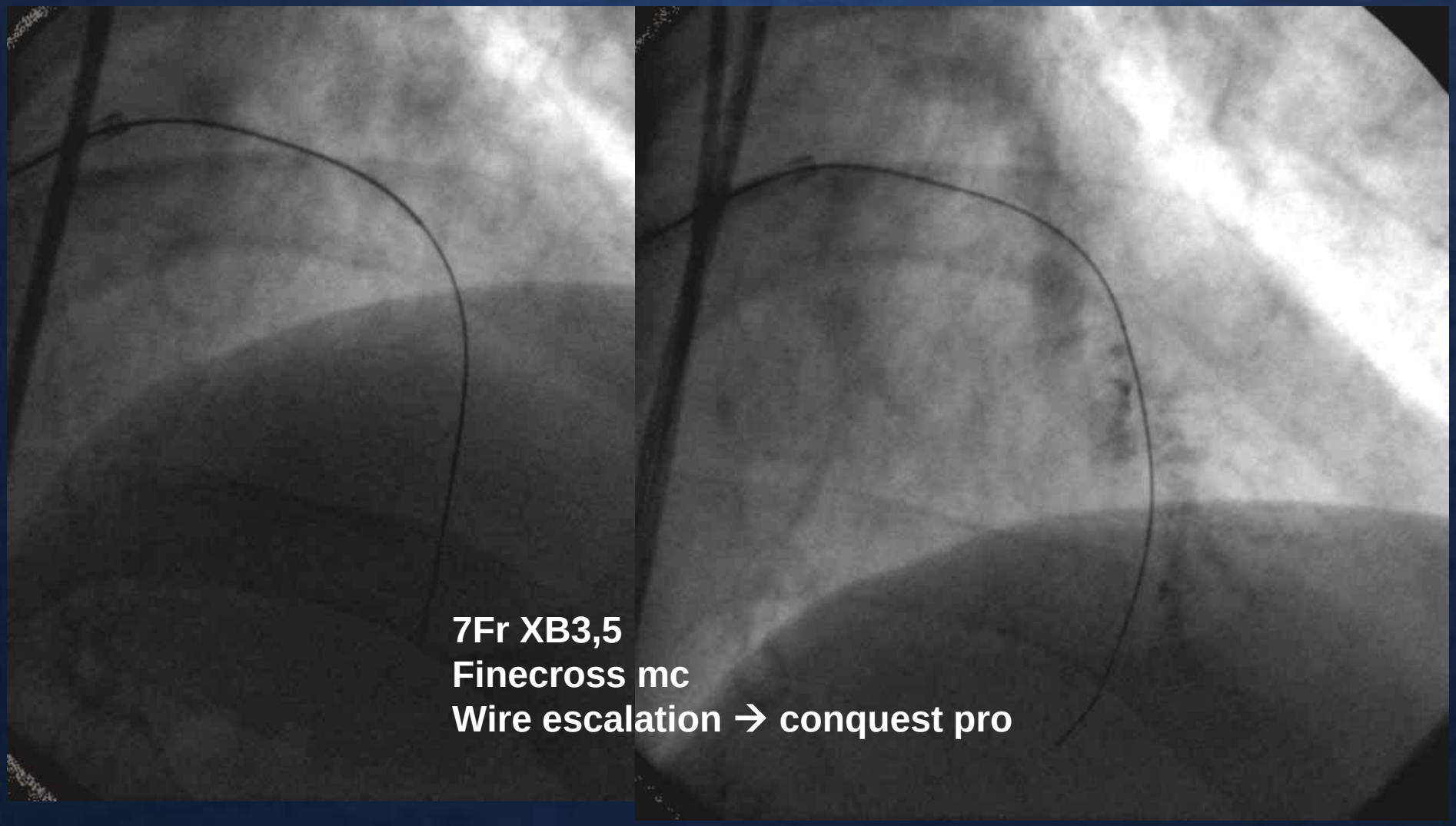
M/61, UAP, Akinesia of RCA(45%)

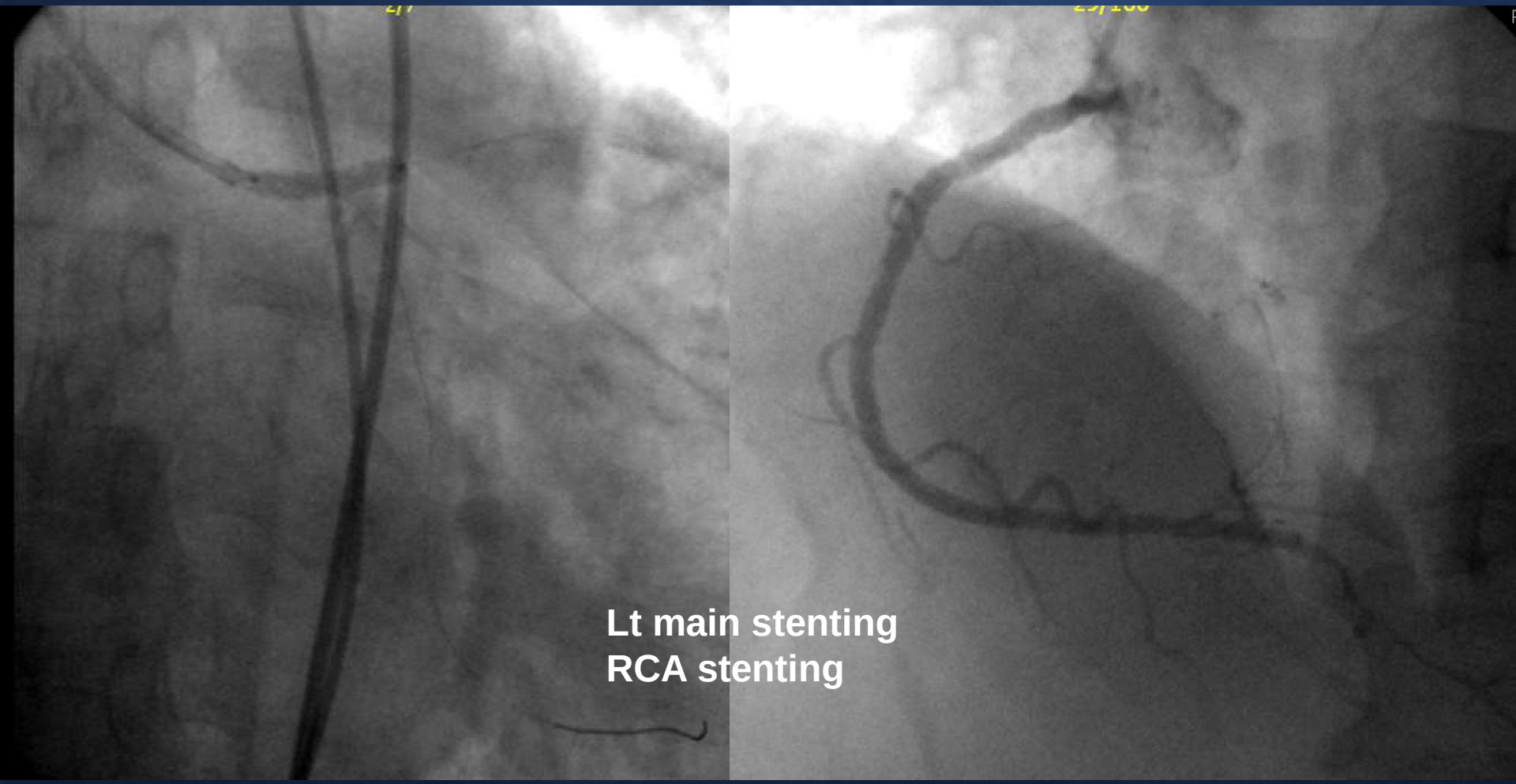




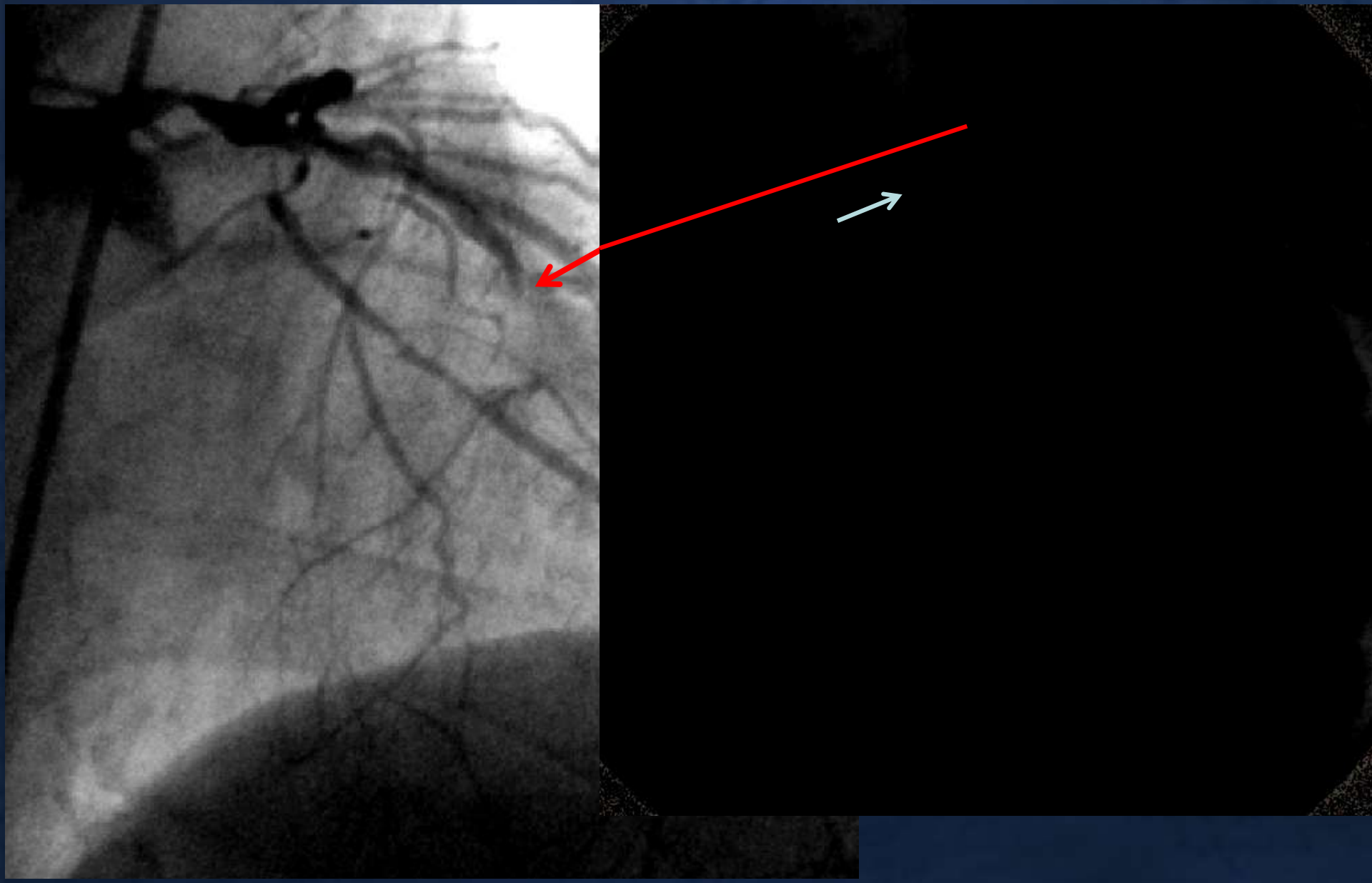


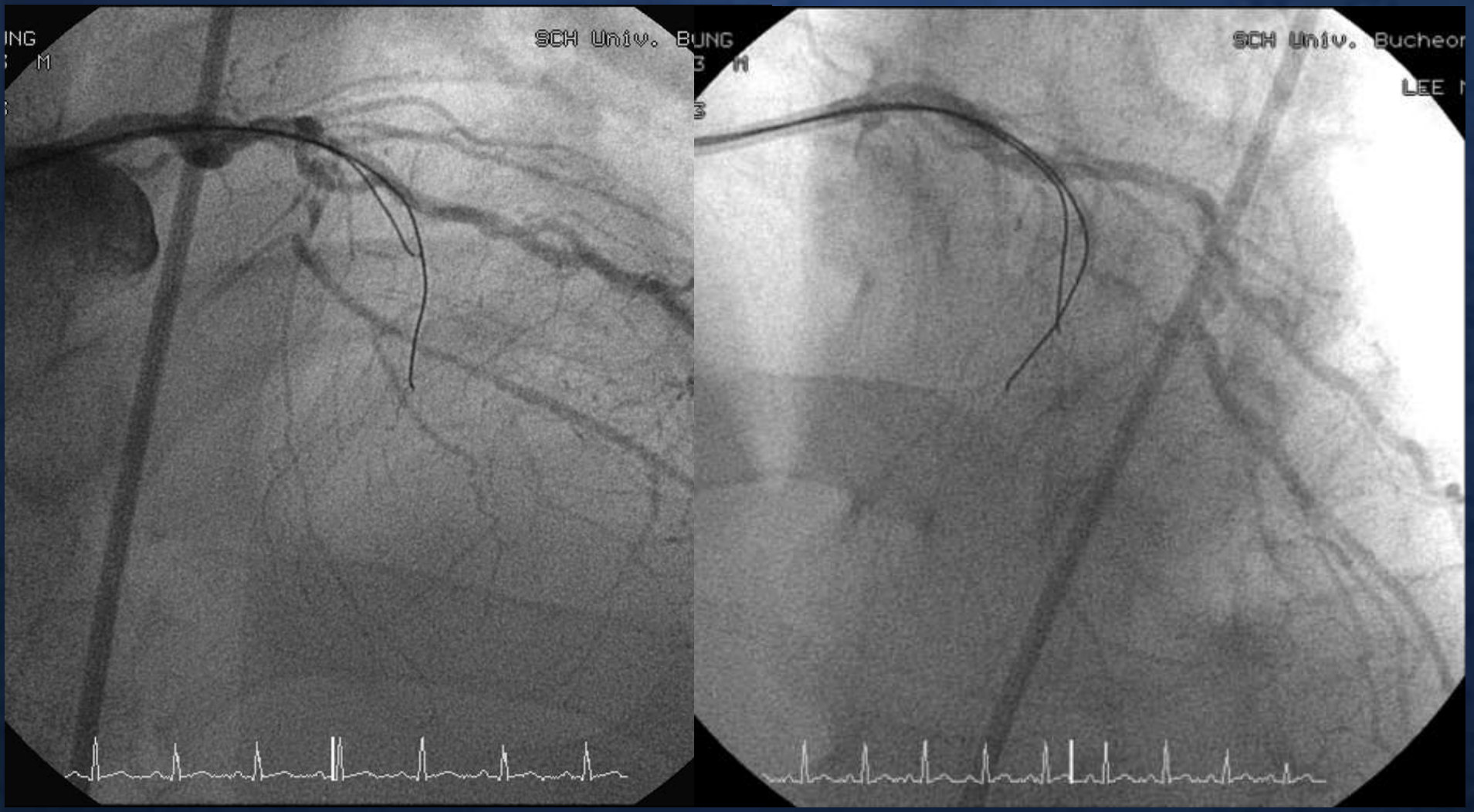



7Fr XB3,5
Finecross mc
Wire escalation → conquest pro


Lt main stenting
RCA stenting

Retry (7 days later)

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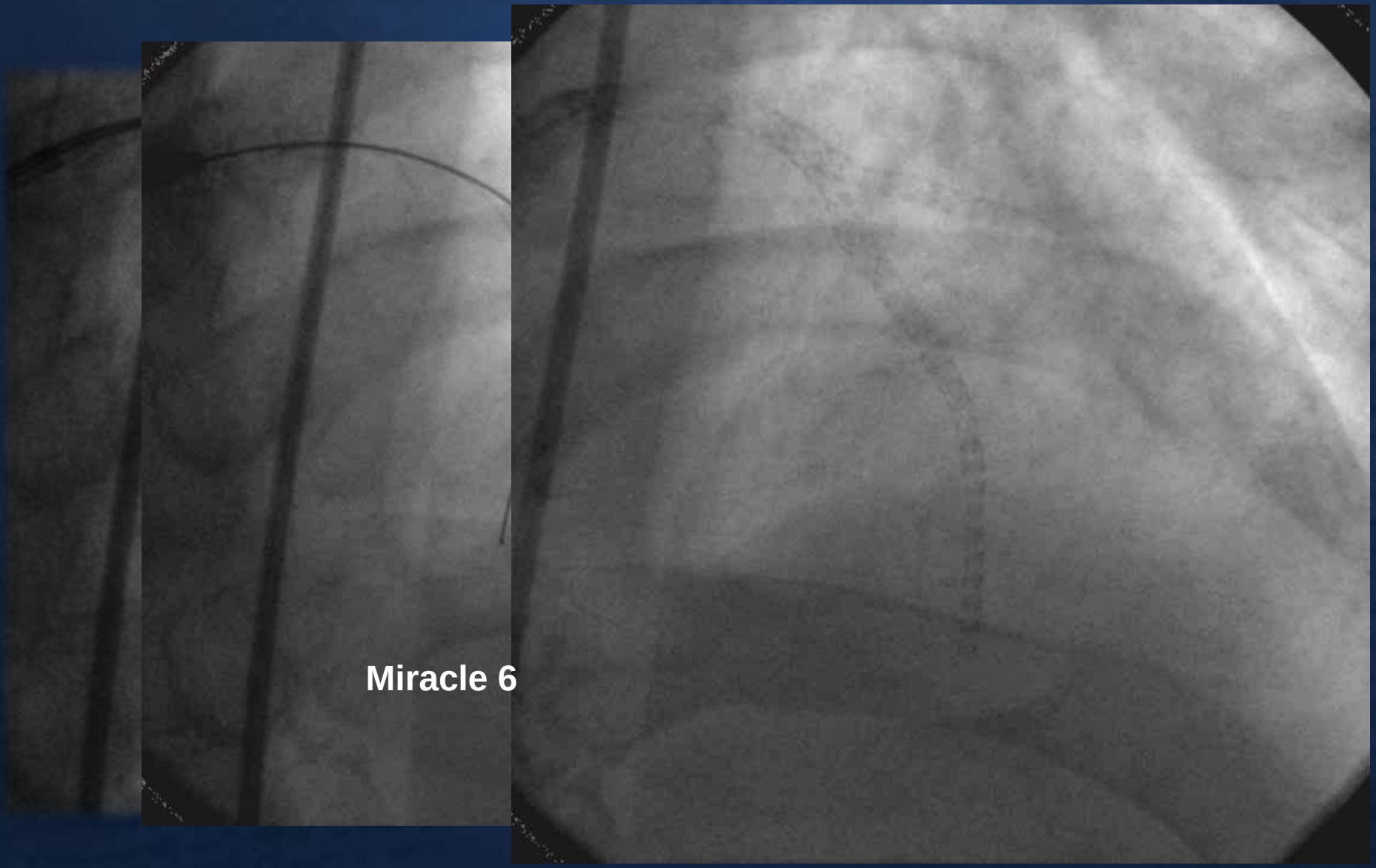
Miracle 6

Summary

- Complete understanding of anatomy is a key
- IVUS is very helpful tool for finding CTO entrance in the case of stumpless or ambiguous stump CTO
- Ante grade approach is still a major modality for CTO-PCI and Operator should be used to various kinds of antegrade techniques, especially parallel wire technique